Enlistment motivators for high quality recruits in the Army Reserve

Halverson, David D.

Monterey, California. Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL

Monterey, California

THESIS

ENLISTMENT MOTIVATORS FOR HIGH QUALITY RECRUITS IN THE ARMY RESERVE

by

David D. Halverson

June 1989

Co-Advisors: Laura Johnson
George Thomas

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Prof. Laura Johnson	(408) 646-2569	Code 55Jo

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Enlistment Motivators for High Quality Recruits in the Army Reserve

by

David D. Halverson
Captain, United States Army
B.S., United States Military Academy, 1979

Submitted in partial fulfillment
of the requirements for the degree of

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This thesis investigates the relationship between the quality of recruits and the factors that influence their enlistment decision. Demographic variables, such as gender, educational level, marital status, and ethnic group, and quality are related to the propensity to enlist in the Army Reserves. The data were obtained from the 1987 New Recruit Survey of the Army Reserve recruits. The analysis attempts to study what significant differences, if any, there are in the enlistment decision of soldiers who score in the upper 50th percentile of the Armed Forces Qualification Test (AFQT), and those that are in the lower half of the AFQT test results. The results of log-linear factor analysis indicate that educational benefits were important motivation for high quality recruits to enlist in the Army Reserves. Log-linear analysis shows differences among demographic categories in their propensity for enlistment. Factor analysis identifies four underlying factors that influence a recruit's enlistment decision. The four factors were both economic and non-economic and were labelled "Self-Improvement," "Skill Training," "Military Service" and "Educational Money." The analysis showed significant differences among demographic categories in the importance of these factors in their decision to enlist.

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I. INTRODUCTION

The United States Army requires a force comprised of intelligent, disciplined and professional soldiers. This is a difficult requirement in light of the current environment of budgetary constraints, declining youth population and increasingly complex technology. During the Annual Association of the United States Army Luncheon on 18 October 1988, the Chief of Staff of the Army, General Carl E. Vuono told the forum:

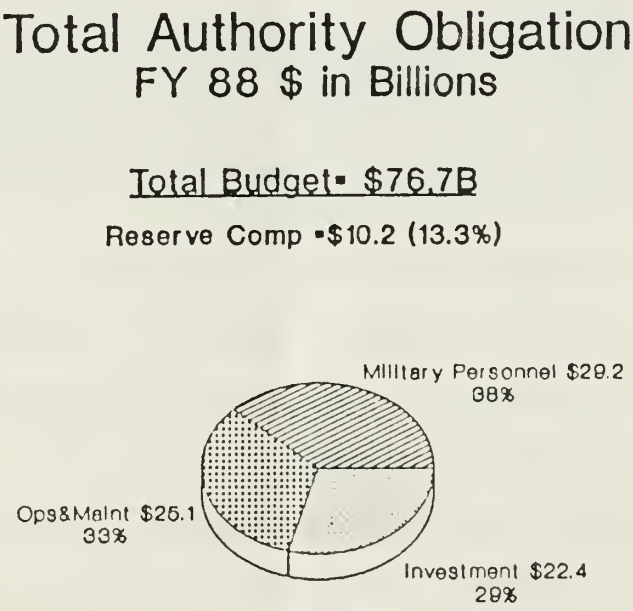
> It is the quality of our forces that impresses our adversaries and gives confidence to our own troops. It is quality that makes it possible for our trained and ready Army today to be the powerful force for peace that it is despite its small size. And I am convinced that it is quality, as well, that will make us a trained and ready force in the future. [Ref. 1:p. 10]

Thus, the Army is committed to the goal that its forces should be comprised of the highest quality soldiers possible. Therefore, it is important to know what enlistment incentives will attract high quality recruits. [Ref. 2:p. 1]

This thesis will identify the different motivating factors that influence a person's decision to enlist in the United States Army Reserves. These motivating factors will be associated with high and non-high quality soldiers and thus will assist recruiters in attracting the high quality soldier.

A. THE QUALITY ISSUE

It is important that the Army insure that it has matched the quality of person with the most appropriate job. However, the cost to obtain such a force is considerable. A trade-off must be struck between the quality and quantity of the force desired. Figure 1 shows that the majority (38 percent) of the Army's fiscal year 1988 Total Obligation Authority budget is allocated towards its manpower. [Ref. 3:p. 25] Military manpower is a very important and costly obligation for the United States Army.



Source: [Ref. 3:p. 25]

Figure 1. The Total Obligation Authority for Fiscal Year 1988

The quality issue is something that has been debated since the inception of the All-Volunteer Army. The Omnibus Defense Authorization Act of 1985 directs the Secretary of Defense to report to the House and Senate Committees on the Armed Services on the quality of each services' enlisted force for a five year period. [Ref. 4:p.1] This is to insure that the lawmakers can track the trend of quality within the force and aid them in determining the budgetary requirement for such a force. The military constitutes a large majority of the youth work force and Congress is interested in the social and economic impact that the military has on the nation.

The issue of quality assesses a person's future potential. Standardized mental aptitude tests and past educational achievements are used to defined quality. By defining quality in quantitative terms, it can be used to determine a recruit's job within the Army. The largest recruiting market for the Armed Forces are young men and women between the ages 17-25 years old. The majority of these people have never held permanent jobs and are just beginning to assume responsibilities. [Ref. 5:p. 18] Therefore, it is important to establish standards and objectives for quality. The standards and objectives for quality are defined in a 1981 Department of Defense report to Congress as:

> Proper enlistment screening and job placement are prerequisites for efficiencies in training, retention of skilled personnel, and mission performance. Any deficiencies in the selection and classification system lead to increased training times and cost, dissatisfied personnel with concomitant in morale, productivity, and retention, and

critical shortages of skills caused by failure to achieve optimal assignment of available manpower into various occupations. [Ref. 6:p. 5]

The military services have two criteria which measure the quality of a recruit. One is the recruit's score on the Armed Forces Qualification Test (AFQT) portion of the Armed Services Vocational Aptitude Battery (ASVAB) which is taken at the initial reception station. Since the early 1950's, the ASVAB has been used by the military as an indicator of the aptitude level of its recruits. In January 1976, the Department of Defense standardized its procedures so that all services use the ASVAB and its derived AFQT as the single test for entry into the Armed Forces. With the renormalizing of the all scores in 1980 due to an error which allowed less qualified candidates to enter the Armed Services, the ASVAB is currently used to measure a recruit's aptitude and mental ability. [Ref. 7:p. 1]

The standardized ASVAB also contains ten subtests which are used to place each recruit in the best job. These subtests cover a number of diverse areas in order to measure the recruit's true functional abilities. These areas (shown in Table 1) help distinguish the recruit's ability to handle certain jobs and skills. It measures both mechanical and scholastic capabilities of the recruit.

The scores on the four subtests of word knowledge, paragraph comprehension, arithmetic reasoning and numerical operations combine to make up the Armed Forces Qualification

TABLE 1

THE TEN ARMED SERVICES VOCATIONAL APTITUDE BATTERY (ASVAB) SUBTESTS

* Arithmetic Reasoning	* General Science
* Numerical Operations	* Mathematics Knowledge
* Paragraph Comprehension	* Electronics Information
* Word Knowledge	* Mechanical Comprehension
* Coding Speed	* Automotive-Shop Information

Source: [Ref. 5:p. 20]

Test (AFQT) score. These AFQT scores are used by the military to measure the recruits level of trainability and to classify them into certain mental/AFQT categories, as shown in Table 2. These categories define the constraints under which the term "quality" is defined. Enlistees who score in Categories I and II tend to be well above to above average in trainability, individuals in Categories IIIA and IIIB tend to be average and the last two categories tend to be below or well below average, respectively. Those in category IV normally read at a 5th to 7th grade level and those in category V are prohibited by law from entering the service. [Ref. 8:p. 99]

The second criterion for classification is educational level attainment. The Armed Services place a great deal of emphasis on the completion of high school, since "possession of a high school diploma is the best single measure of a person's potential for adapting to life in the military...." [Ref. 9:p. 30] Table 3 shows that high school graduates tend

TABLE 2

ARMED FORCES QUALIFICATION TEST (AFQT) CATEGORIES

AFQT Category	AFQT Percentile Score	Level of Trainability
I	93-99	Well above Average
II	65-92	Above Average
IIIA	50-64	Average
IIIB	31-49	Average
IV	10-30	Below Average
V	1-9	Well below Average

Source: [Ref. 4:p. 9]

TABLE 3

FIRST TERM ATTRITION*
(NUMBER AND PERCENT)
FOR FISCAL YEARS 1977-1981 ACCESSION COHORTS

Service	Non-High School Grad		High School Grad	
	Number	Percent	Number	Percent
Army	22235	46.3	24214	26.9
Navy	9254	40.3	13214	21.9
Marine Corps	4580	40.6	7933	26.5
Air Force	4405	48.0	14909	24.2
DoD	40474	44.2	61055	24.9

* Five year average non-end-of-term-of-service losses in the first three years of initial service commitment.

Source: [Ref. 4:p. 6]

to have lower first term attrition statistics. In 1981 research conducted by Armor of the RAND Corporation concluded that after three years of military service only 25 percent of

high school graduates left the service but over 44 percent of the non-high school graduates had resigned. [Ref. 10:p. 8]

The selection criteria of educational level, AFQT and ASVAB set the standards under which the youth of America enter the Armed Services. In order to be consistent with current policy, this thesis will define a "high" quality recruit as one who is a high school graduate and falls within the upper 50^{th} percentile of the AFQT distribution (CAT I, II, and IIIA).

B. QUALITY'S IMPACT ON PERFORMANCE

The four pillars of Army manpower revolve around readiness, sustainability, modernization, and force structure. Readiness is a function of training (war fighting capability) and discipline. Sustainability is the retention of the quality soldier in the Army. Modernization is the advancement of technology in order to have superiority or at least parity with the threat. The last pillar, force structure, ensures that the forces are organized and structured properly so the Army can accomplish its intended mission. Vineberg and Joyner (1982) of the Human Resources Research Organization provided a series of research studies that investigated the relationship between quality and performance. These studies conclude that quality has an inverse affect on discipline, while it has a positive affect on leadership and hands-on job performance with high technological equipment. The hands-on

job performance was measured by an annual test called the Army's Skill Qualification Test (SQT). [Ref. 11]

The military uses the occurences of the following as indicators of lack of discipline: AWOL (absent from duty without proper authorization less than 30 days); Desertion (absent without leave for greater than 30 days); Article 15s' and Court Martials (violations of Uniform Code of Military Justice-misdemeanor); Crimes/violence (felony violations of the Uniform Code of Military Justice). These statistics are monitored very closely by the Army's leadership, because discipline is the foundation of an effective fighting unit.

As in any organization, incidents of poor discipline are very costly. In 1986, Toomepuu of the United States Army Recruiting Command concluded that the costs to the government due to poor discipline are measured by the following:

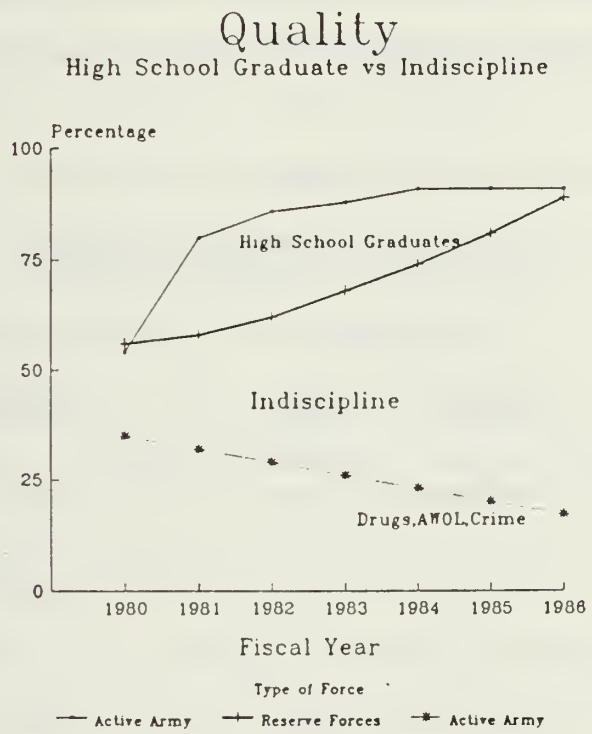
- Loss of public support from adverse publicity
- More difficult recruiting
- Lowering of Army morale
- Lower retention rates
- Perceptions by allies and adversaries of a weakening of America's defense leading to a loss of deterrence. [Ref. 12:pp. 13-14]

Furthermore, Toomepuu stated that there was a strong inverse relationship between occurrences of discipline problems and the percentage of high quality accessions from Fiscal year 1980 through 1986. The number of high quality accessions within the Army has been increasing, while the

number of Article 15's, desertions, AWOL's, and violent crimes has been decreasing. [Ref. 12:p. 11]

This philosophy is shared by many people as shown below in Figure 2 and reiterated by General Wickham during the Senate hearings on 12 May 1987 when he said:

> The Army is a strategic force, and its capability is balance (sic), flexible, ready, visible, and usable. The support of Congress is essential if we are to keep the value of our deterrent credible. Readiness is our number one task; thus, we need quality, disciplined soldiers that are ready to fight at a moment's notice. [Ref. 13:p. 201]



Source: [Ref. 13:p. 201]

Figure 2. The Percentage of High School Graduates in the Active Army and Reserve Forces and Incidents of Indiscipline from 1980 through 1986.

A quality force must have strong leaders in order to become an effective fighting unit. The paradox of 20th century warfare is that even though the size of the armies has grown, and the technology has increased and become more sophisticated, the modern battlefield will rely on small-unit tactics. [Ref. 14:Appendix D, p. 1] This means that it is imperative that the Army maintain a non-commissioned officer corps that can meet this challenge. The first line supervisor begins at the E-5 or E-6 level. Table 4 shows how the high quality infantryman (11B) and armor crewman (19E) is promoted from E-5 to E-6 (squad/tank commander) in less time or quicker.

TABLE 4

E-5 TO E-6 PROMOTION RESULTS
MEASURED IN TIME IN GRADE

	HIGH SCHOOL		NON-HIGH SCHOOL	
MOS	I-IIIA	IIIB	I-IIIA	IIIB
11B Infantryman Time in Grade (months)	30.8	32.6	32.2	34.2
% Relative To HSDG I-IIIA	-	5.8	4.5	11.0
19E Armor Crewman Time in Grade (months)	28.0	31.5	29.2	32.8
% Relative To HSDG I-IIIA	-	12.5	4.3	17.1

Source: [Ref. 14:pp. 15-16]

The majority of research is concerned with how quality affects job performance and Skill Qualification Test (SQT) results. This research takes on added importance as the Army enters an age of advanced weaponry. In 1986, William E. Depuy speaking at a conference on the All-Volunteer Army stated:

> Man/machine system performance is very sensitive to personnel quality. The best leverage in improving force performance lies in the selection (recruiting), training, assignment and retention of high quality personnel. [Ref. 15:pp. 134-135]

This age of high technology weapons and integrated systems ensures that the complexity in Army jobs will increase. In 1982 the Army Combined Arms Combat Development Activity [Ref. 16] studied this phenomenon and concluded:

- A steady upward migration of aptitudinal requirements
- A steady increase in institutional training on the new systems
- An increase in skill sustainment
- An increase in the difficulty of training management
- An increase in the difficulty, complexity, and cost of the total maintenance tasks on the new systems
- Soldier quality plays an important role in combat/cost-effectiveness
- Improvements are needed in terms of manpower quality.

Probably one of the most relevant studies centering on soldiers' performance and AFQT category was the Project 100,000 study conducted by Human Resources Research Organization (HumRRO). McFann, in 1969, substantiated previous results which showed that job performance was directly related

to both AFQT and job experience. [Ref. 17:p. 16] In 1986, Horne concluded from studying TRANSANA training data and the 1983 skill level 2 SQT performance data that AFQT was a significant predictor of performance in the Army. [Ref. 17:p.16]

Recently, the Office of Economic and Manpower Analysis, United States Military Academy clearly showed that armor crews from the upper AFQT categories performed far better than the soldiers from lower AFQT categories. In a combat environment where extensive maneuver is required these differences may be understated. [Ref. 18] The results of their study are displayed in Table 5.

TABLE 5

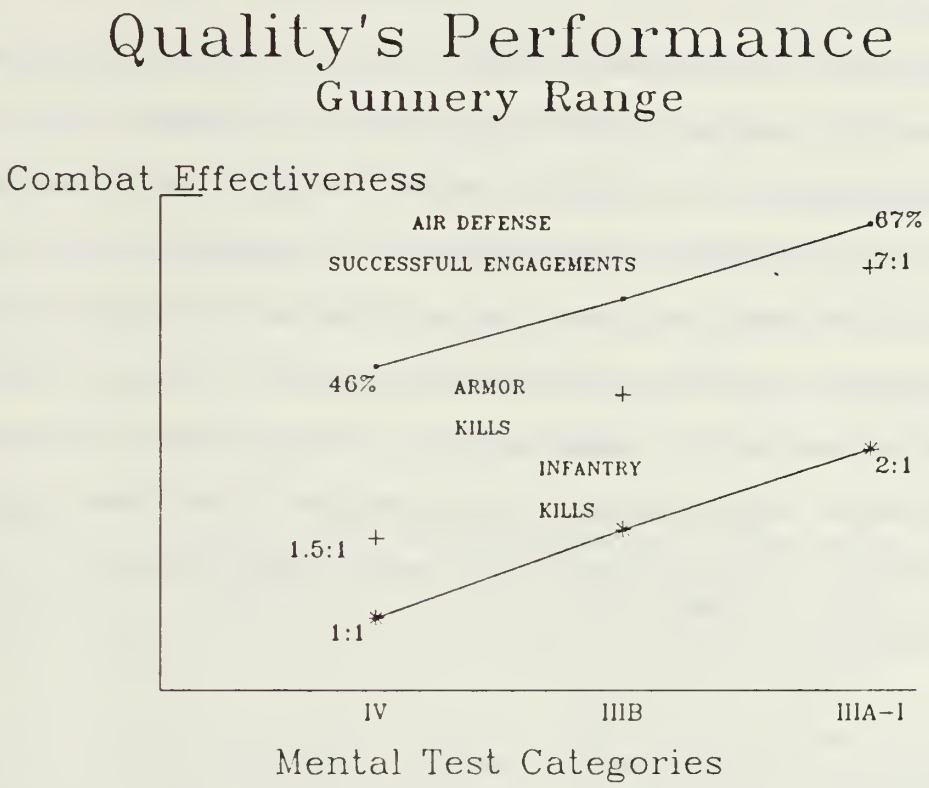
TANK CREW PERFORMANCE ON GUNNERY RANGE

	M60		M1	
		% incr rel.		% incr rel.
Crew AFQT	Kills	TSC IV	Kills	TSC IV
I	10.23	75.2	12.75	18.9
II	9.51	62.8	12.47	16.3
IIIA	8.52	45.9	12.05	12.4
IIIB	7.47	27.9	11.57	7.9
IV	5.84	----	10.72	----

Source: 7th Army Tank Crew Qualification, Grafenwohr Training Area, FRG (1984)

The high quality soldier is needed on tomorrow's battlefield. The soldier that is a high school graduate and

in the upper 50th percentile of the AFQT mental category will be able to meet the challenge and will be the force multiplier, as shown in Figure 3.



Source: [Ref. 13:p. 202

Figure 3. The Performance of Mental Categories versus the Combat Effectiveness of the Different Type Units

This force multiplier is required for the United States Army to defeat an enemy that outnumbers us in personnel and equipment. It is evident that the higher quality recruit can

perform better than his lower quality counterpart. This high quality soldier is needed on the battlefield of tommorrow in order to match our enemy. Therefore, the recruiter must attract this high quality recruit with limited resources into the Army.

This thesis will enable the recruiter to understand the factors which motivate the high quality prospect in selecting the Army Reserves and thus provide insight into methods for attracting the high quality soldier. Chapter II will address the All-Volunteer Army, the composition of the Army Reserves, the present quality conditions of the forces and the enlistment decision. Chapter III describes the New Recruit Survey from which data were obtained and the analysis methodology. Chapters IV and V will present the results of the analysis.

II. BACKGROUND

A. THE ALL-VOLUNTEER FORCE

In 1969 the Gates Commission, under President Nixon, studied the feasibility of transitioning to an All-Volunteer Army. This idea of an All-Volunteer Army was the topic of much discussion in the 1960's, especially since the United States was fighting in the unpopular Vietnam War, and the domestic situation saw much civil unrest. [Ref. 19:pp. 8-11] In 1970, the Gates Commission presented its recommendations for an All-Volunteer Force. The essence of the report stated:

> However necessary conscription may have been in World War II, it has revealed many disadvantages in the past generation. It has been a costly, inequitable, and divisive procedure for recruiting men for the armed forces. It has imposed heavy burdens on a small minority of men while easing slightly the tax burden on the rest of us.
>
> These costs of conscription would have to be borne out if they were a necessary price for defending our peace and security. They are intolerable when there is an alternative consistent with our basic values. [Ref. 20:pp. 9-10]

Three steps were recommended in order to establish it: higher military salaries, improved conditions of service and recruiting, and the establishment of a standby draft. [Ref. 19:p. 11] On 27 January 1973, Secretary of Defense Melvin Laird announced that the United States would end the conscription of its young men and adopt the policy of an All-Volunteer Army. This policy evolved from a confluence of several factors: the understandable unpopularity of a lengthy and

inconclusive war, the rapid growth in the youth population due to the baby boom, and the perception that a draft discriminated against those individuals whom the civil rights movement and the War against Poverty sought to assist. [Ref. 21:p. 24]

The incubation of the volunteer force has been a slow and difficult process. Many people criticized the concept based on the problems encountered with the initial quality of the force, or the socio-economic segments or ethnic groups represented by the force. However, the Armed Services have done an extraordinary job in improving their organizations. This was no small feat. The leadership of our active force manages around 2.5 million personnel and relies heavily on the National Guard and Army Reserves to round out the force for its wartime mission. This requires a force that is flexible and responsive to any mission. Therefore, looking at the major policy changes our government has made in regard to the military and the change in many missions of the military; the move to an All-Volunteer Army easily stands out as a success. [Ref. 22:p. 12]

In 1983, Secretary of Defense Casper Weinberger best summarized this principle by announcing:

> ...that the All-Volunteer force experiment is over and that from now on the Department of Defense will no longer refer to its military as the All-Volunteer Force. They are simply our armed forces. [Ref. 23:p. 5]

B. THE RESERVE FORCES

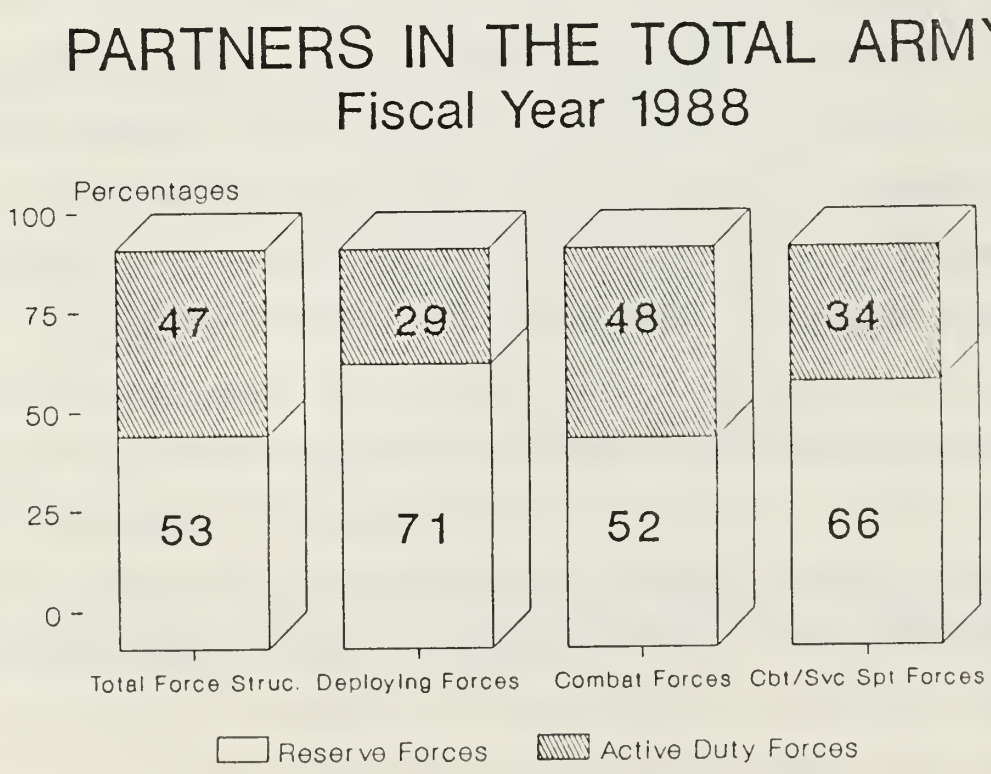
The scope of this research deals with the Army Reserve segment of the United States Army. The Reserve forces of the Army are comprised of the Army National Guard and the Army Reserve units. These Reserve forces were established to supplement the readiness of our Armed Forces under the All-Volunteer Army. The government understood that a large standing Army would not be supported by its people, either economically or morally. In 1970, then-Secretary of Defense Melvin Laird articulated a Total Force Concept, which directed the Secretary of the Army to develop a balance in the missions, and responsiblity between the Active, Guard and Reserve forces. [Ref. 24:p. 2]

The Reserve components are integral to the national security of United States and are essential elements of the Total Force. It is crucial that the Reserve forces have the same priority in equipment and manpower as the policy-makers allege in theory. These Reserve forces, in concept, will become full partners in the execution of operational orders and will sustain the battle with combat units and combat support units. In order for this concept to become reality the policy-makers and the leadership must not only be aware of the importance of the Reserves, but also allocate resources in order to enable the Reserves to accomplish its mission.

In 1982, Casper Weinberger reiterated this fact when he stated:

> We can no longer consider the reserve forces as merely forces in the reserve....Instead, they have to be an integral part of the Total Force....They have to be, and in fact are, a blending of the professionalism of the full-time soldier with the professionalism of a citizen-soldier. Only in that way can we achieve the military strength that is necessary to defend freedom. [Ref. 25:p.xxxi]

The importance of the National Guard and the Selected Reserves to the overall mission of the Army is shown by their contribution to the Total Force in manpower, equipment, and force structure. Figure 4 shows that the Reserves account for the majority of the combat forces, combat support and combat service support units required by the Army under full mobilization. (See Appendix A for a detailed breakdown by type of unit.)



Source: [Ref. 3:p. 16]

Figure 4. Force Structure of the Army by Active and Reserve Components

This reliance by the United States on the Reserves which maintains a 778,000 member force must be substaniated by an adequate priority in funds. However, the Reserves received only 13.3 percent of the Army's Fiscal Year 1988 resources. [Ref. 4:p. 14] Clearly, the trainability, maintainability and sustainability of our Reserve forces is paramount for the United States Army to accomplish its mission. The proper mix between quality and quantity must be just as important for the Reserve forces as for the Active forces.

C. DISTRIBUTION OF QUALITY

The basic rationale for having the Reserve forces is economic. If resources and funds were unlimited, the United States could maintain enough active duty soldiers to meet all contingencies. However, they are not. Therefore, there must be some tradeoff between the numbers of active forces and those in the Reserves. [Ref. 26:p. 19] Since the All-Volunteer system was established, the role of the Reserves has been increasing. The manpower strength figures of the Reserve forces show a positive growth of 39.8 percent from 1981-1988 while the Active Army displays a slight decline (see Table 6).

The Reserve forces, as well as the Active Army, have been enjoying much success in increasing the number of high quality soldiers during the past decade. This increasing success of attracting high school graduates while decreasing the amount of lower mental category recruits is displayed in Figure 5.

TABLE 6

PERSONNEL STRENGTH
(In Thousands)

	FY 81[1]	FY 87[1]	% Change FY 81-87	Projected FY 88[2]	% Change FY 81-88
READY RESERVE					
Sel.Reserve					
ARNG (468.9)[3]	389.0	451.9	16.2%	457.3	17.6%
USAR (331.1)[3]	232.0	313.6	35.2%	324.3	39.8%
ACTIVE Comp.					
Army[4]	781.0	780.8	-0.0%	780.9	-0.0%

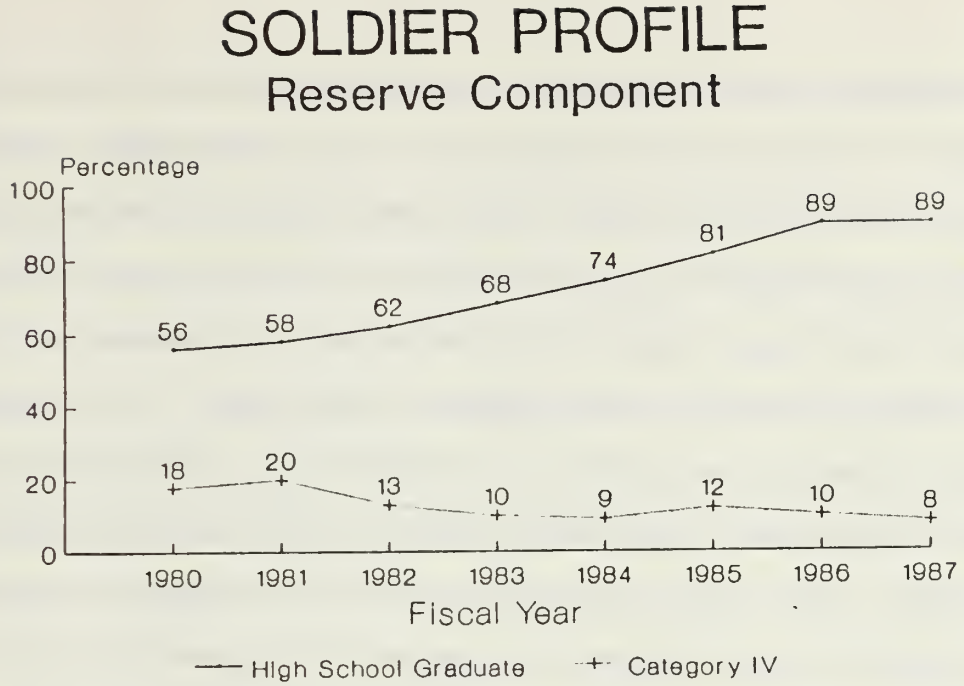
Notes:
1. Reserve component data for 1981-1987 taken from Official Guard and Reserve, Manpower Strengths and Statistics, September 1987.
2. FY 88 data submitted by the services and the Office of the Assistant Secretary of Defense (Reserve Affairs).
3. FY 1987 Wartime Requirement from individual reserve components.
4. FY 1987 active component strengths obtained from the Office of the Assistant Secretary of Defense (Public Affairs) News Release, dated November 30, 1987.

Source: [Ref. 25:pp. 24-25]

Though the quality of the force is increasing, the continued success or failure of the Army's recruiting effort will depend upon the ability of the recruiters and policy-makers to continue to attract high quality people.

D. THE ENLISTMENT DECISION

The concept of the All-Volunteer Army forces the military services to compete with the civilian work sector for their manpower requirements. Therefore, the Army employs many



Source: [Ref. 4:p. 2]

Figure 5. Soldier Profile of the Percentage of Non-prior Service Accessions by High School Diploma, Mental Category IV and Fiscal Year

marketing techniques in order to attract personnel to enlist in the service. A vast amount of information has been acquired through the use of surveys, economic modeling, and sociological studies on the effects of educational incentives and advertising on the enlistment decision. The majority of these studies focus on the Active Force, but Clay-Mendez (1985) found that Active and Reserve manpower policies are interdependent on each other and underscored the need for separate force modeling. [Ref. 27:p. 11] This section will discuss some previous reports on motivators and factors that influence a recruit's enlistment decision.

Glickman, Goodstadt, Korman and Romanczuk (1973) conducted research for the Navy and sampled 53 men who decided to enlist (positive propensity) and 58 men who decided not to enlist (negative propensity). The positive factors for enlisting were job training, educational benefits, influence of peers and parents, maturity, and financial security. The factors leading to a decision not to enlist were finishing one's education, the loss of freedom and the influence of peers and recruiters. The study concluded that the difference between those enlisting and those not enlisting appeared to be how well Navy was perceived as meeting job and career goals. [Ref. 28:p. 7]

Boesel and Richards (1983) presented an overview of enlistment motivators at the 24th Annual Conference of Military Testing. During the draft era the most common reason for enlisting was "to beat the draft" (Lee, Parker, 1977). However, even these enlistees were strongly influenced by the self-improvement factor of "to learn a marketable trade or skill." [Ref. 29:p. 188]

The Youth Attitude Tracking Survey, the successor to the Gilbert Youth Attitude Surveys, is administered annually to about 5,000 military-eligible personnel in order to study enlistment propensity, attitudes and perceptions of the military and a number of demographic variables. [Ref. 29:p. 188] The results of the 1981 survey showed that personnel with positive propensity to enlist view the military as a

place where they can learn, develop, and advance while enjoying job security. The factor "teaches a valuable skill/trade" has repeatedly been identified as a very important job characteristic. The Army relies heavily on surveys on personnel who have enlisted in the Army and tries to measure their attitudes or factors that influenced their enlistment decision. The 1979 Armed Forces Enlisted Entrance Service (AFEES) survey indicated that "skill training," "money for college," and a self-improvement factor "to better myself in life" are important reasons for young people to enlist in the Army [Ref. 29:p. 190]. Similar conclusions were reached by Elig, Gade, and Shields (1982) in their studies of the most important reasons for enlisting. This study also showed an increase in the educational factor "money for college" from seven percent in 1979 to 15 percent in 1982. [Ref. 30:p. 198]

These factors are further reinforced by the findings of Kim (1982) from the Youth Cohort of the Longitudinal Survey of the Labor Force Experience in 1980. This survey began in 1979 with a sample size of 12,000 youth age 14-22, including 1,200 military members. [Ref. 29:p. 190] Kim found that the main reasons for enlisting were:

- 28 percent responded "training"
- 20 percent responded "better myself"
- 15 percent responded "money for college".

The reason for enlistment "money for college" was both an educational/self-improvement variable as well as an economic variable. This factor shows that a person wants to improve himself by attending college, but can do so only by utilizing the military's educational incentive programs. These findings were corroborated by a Department of Defense Educational Survey in 1981 which showed that the probability of enlistment was related to the need for money for college. (See Table 7.)

TABLE 7

ENLISTMENT RATE BY FINANCIAL NEED
(HIGH QUALITY APPLICANTS)

	Additional Amount Needed to Continue Education				
	$0	$1-1000	$1001-2000	$2001-3000	$3000+
Enlistment Rate	43%	52%	59%	60%	65%
(N = sample size)	(404)	(239)	(290)	(252)	(182)

Source: [Ref. 29:p. 191]

Pliske, Elig, and Johnson (1986) working for the United States Army Research Institute for the Behavioral and Social Sciences obtained data from the 1982 and 1983 New Recruit Survey and studied the motivation patterns for enlistment. Their cross-tabulated results, as well as principal component analysis, showed that both economic variables and non-economic variables must be looked at when investigating the reasons for

enlistment. [Ref. 31] Six factors were identified in the analysis:

- Self-improvement--better myself, more self-reliant, better individual, need for discipline, leadership training, and physical training
- Economic--get better job, earn more money, skill training
- Military Service--retirement benefits, fringe benefits, be a soldier, serve my country
- Time out--escape personal problems, join old friends, family tradition, take time out
- Travel--chance to travel, get away from home
- Education Money--money for college, money for vocational/technological school.

The high mental category recruits had large, positive factor scores for educational money which suggested that the "high" quality enlistees are highly influenced by the Army College Fund. [Ref. 31:pp. 27-29]

Toomepuu (1986) stated that the dual marketing recruiting concept incorporates the concept that a prospective recruit tends to be either employment-oriented or college-oriented. The employment-oriented recruit enlists for reasons of service to country, skill training, job security, and competitive benefits whereas the college-oriented recruit enters the service for reasons of service to country, hiatus-adventure, independence, and deferred reward (money for college). [Ref. 32:p. 20]

Most of the current and past research deals with the Active Army forces. There has been little work on the

Reserve-specific motivators. However, the Reserve recruiting community has recently defined its goals and has been integrated into the Total Army recruiting effort. The Reserve Policy Board for Fiscal Year 1987 [Ref. 25:p. 30] listed the following factors as ones that influence this recruiting effort:

- quality of leadership
- management practices
- Selected Reserve incentive practices
- Montgomery GI Bill
- challenging training
- civilian attitudes towards military service
- professionalism and quality of recruiters
- number of recruiters
- advertising programs
- the domestic economy
- referral programs.

The Montgomery GI Bill is an extremely precious recruiting incentive. In 1987, 41.4 percent of the eligibles applied for the GI Bill use. [Ref. 25:p. 38]

E. SUMMARY

The All-Volunteer Army is here to stay and military decision-makers must be ready to meet its challenge. Tomorrow's Army sees a declining eligible youth population, increasing technology, and increasing budget constraints.

While the role of the Reserve forces is more vital to our national security than ever before, decision-makers must ensure that the necessary resources are available. The policy-makers must strive to maximize the benefit of each high quality recruit, while minimizing their cost. To ensure that the Reserve forces obtain high quality soldiers, motivating factors must be understood.

Chapter III discusses the methodology to be used in this research. The data were obtained from the 1987 New Recruit Survey and the thesis will focus on the Army Reserve recruit. The main concern will be to identify the differences in reasons for enlisting between the "high" quality and the "non-high" quality recruits. These results will be further examined with regard to demographic variables such as gender, educational status, ethnic group, and marital status.

III. DATA DESCRIPTION AND METHODOLOGY

A. RESEARCH OBJECTIVES

This research has two main objectives. The first is to identify differences, if any, in the factors that motivate high quality and non-high quality individuals to enter the Army Reserves. The second objective is to identify those motivating factors that differ by demographic variables, such as gender, ethnic group, educational status, and marital status.

To acquire an unbiased definition for high quality, quality was defined in the following manner. The 'high quality' soldier is one who scored in the 50^{th} percentile range or higher on the AFQT portion of the ASVAB test (Mental Category I-IIIA). The 'non-high quality' soldier scored between the 10^{th}-49^{th} percentile range (Mental Category IIIB, IV). This will be the criterion that will differentiate the quality category of a specific soldier. Since only 5.3% of the New Recruit Survey respondents did not graduate from high school, high school dropouts will be omitted from the analysis.

This research restricted itself to people who actually enlisted in the Army Reserves. Therefore, we must be careful not to infer anything about the motivating factors for not entering the Army Reserves from this data. The data used in

this thesis were collected by the Data Recognition Corporation (DRC) from the 1987 United States Army Recruiting Command New Recruit Survey (NRS). The 1987 NRS contained the following number of variables and respondents:

- Active Army (7006 observations, 862 variables)
- Army Reserve (1792 observations, 787 variables)
- National Guard (2322 observations, 787 variables).

B. THE NEW RECRUIT SURVEY

1. History and Administration

The New Recruit Survey was developed by the U.S. Army Research Institute for Behavioral and Social Sciences (ARI) in 1982 under a commission by the Deputy Chief of Staff for Personnel. In 1984, the U.S. Army Recruiting Command assumed control of the survey. [Ref. 33:p. 2] ARI held the contract for the administration of the survey from 1982-1986 and in 1987 the contract was awarded to the Data Recognition Corporation. DRC had the responsibility for the administration, data collection and reporting on the New Recruit Survey (NRS). This multi-year survey research endeavor has been conducted to measure enlistment motivators, attitudes, knowledge, and personal characteristics of the new recruits at the time of their initial entry into the U.S. Army. [Ref. 33:p.1]

Although the sponsorship and specific question content has changed across time the basic charter for this field research survey has remained unchanged and is to:

- Determine who is enlisting in the U.S. Army and why
- Determine how to target recruiting resources to attract high quality recruits
- Determine why recent recruits joined and their propensity to remain in the service
- Determine which recruiting and advertising practices are proving the most effective and why. [Ref. 33:p. 2]

The 1987 New Recruit Survey was administered differently than previous years. The 1987 NRS sampling plan incorporated techniques to limit the effects of seasonal and self administration biases. Differences between previous NRS and the 1987 sampling plan were:

Previous NRS	1987 NRS
- Collected during the summer months	- Collected year-round in trimesters
- Self-administered at the reception station	- Administrator training conducted
	- Field survey Administrator the reception station
	- Optically scannable survey booklet

The 1987 survey covered the time frame June 1986-May 1987 and a representative sample of the total Army forces were surveyed at the eight reception stations. A total of 11,270 surveys were completed, of which 62% were Regular Army, 17% were Army Reserve, and 21% National Guard. Three types of equally distributed forms (A, B, C) were administered to tose in the Regular Army, while the members of the Army Reserve and

National Guard were given form D. This research will deal with the 1792 responses to the Form D survey. [Ref. 33:p. 13]

2. Research Sample

The Reserve survey data were crosstabulated and Table 8 shows the basic biodemographic traits by gender. The majority of the sample consisted of 77% males which was over three times the amount of female respondents (23%). Over 80% of the male respondents were in the upper 50^{th} percentile of the AFQT category (CAT I-IIIA) or "high quality" as compared to 64% of the females. A large number of mental category IIIB females were sampled (36%) as compared to male (15.6%). This could be explained by the fact that category IV females are not allowed to enlist by law, and are thus enlisted as "non-high" quality CAT IIIB in order to make quotas. Non-prior military service made up over 98% of the respondents and the prior military personnel (< 2%) will be excluded from the research. As stated earlier, the majority (over 90%) of the survey sample group are single and between the ages of 16-24 years old.

3. Enlistee Motivation Variables

The propensity of a recruit to join the Army has fluctuated throughout the years, and this is especially true of the factors that influenced their enlistment decision. [Ref. 34:p. 43] The New Recruit Survey has over 200 questions pertaining to various facets of the recruit while over 30 questions inquire specifically about the importance of certain

TABLE 8

DEMOGRAPHIC CHARACTERISTICS OF
1987 NEW RECRUIT SURVEY

Mental Category	Male (N = 1366)	Female (N = 402)
CAT I &II	55.3%	38.1%
CAT IIIA	25.6%	25.9%
CAT IIIB	15.6%	36.0%
CAT IV	3.5%	--
	100.0%	100.0%

Educational Status	Male (N = 1385)	Female (N = 407)
Post High School	10.9%	15.0%
High School Degree	39.6%	50.1%
In High School	42.7%	34.6%
No High School Degree	6.8%	.3%
	100.0%	100.0%

Ethnic Group	Male (N = 1384)	Female (N = 407)
White	69.6%	49.9%
Black	22.6%	40.8%
Hispanic	4.6%	5.6%
Other	3.2%	3.7%
	100.0%	100.0%

Prior Military Training	Male (N = 1385)	Female (N = 407)
Prior Military	1.5%	2.5%
Non-Prior Military	98.5%	97.5%
	100.0%	100.0%

Marital Status	Male (N = 1384)	Female (N = 406)
Single	93.9%	90.2%
Married	5.6%	7.6%
Divorced	.5%	2.0%
Other	---	.2%
	100.0%	100.0%

TABLE 8 (CONTINUED)

Age at Accession	Male (N = 1384)	Female (N = 407)
16-17	35.3%	26.8%
18	24.9%	28.3%
19	12.5%	16.0%
20-24	20.0%	20.2%
25-34	7.3%	8.7%
	100.0%	100.0%

factors on the enlistees' decision to enter the Army Reserve. This research focuses on one forced-choice question on the "most important reason for enlisting in the Army Reserves" and 29 multinominal questions which identify a factors' level of importance on their enlistment decision. The forced-response question deals with choosing one of the ten reasons for enlisting. Table 9 shows the format in which the question was administered.

TABLE 9

THE NRS 1987 FORCED RESPONSE QUESTION

Which of these reasons was the MOST IMPORTANT REASON for enlisting in the Army Reserves? (Mark only one)

- o I was unemployed
- o To be away from home on my own
- o I want to travel
- o To get away from a personal problem
- o To serve my country
- o Earn more money
- o Family tradition
- o To prove I can make it
- o To get trained in a skill
- o Money for a college education

Table 10 shows the 29 reasons for enlistment allowed on the multinominal questions with responses carry a minimum value of 1 for 'not at all important' to a maximum value of 4 for 'I would not have enlisted except for this reason.'

TABLE 10

THE MULTINOMINAL QUESTIONS IDENTIFYING THE REASONS A RECRUIT ENLISTED RESPONSES

IMPORTANCE OF DEVELOPING MY POTENTIAL.
IMPORTANCE OF A CHANCE TO BETTER MYSELF
IMPORTANCE OF DEVELOPING SELF-CONFIDENCE
IMPORTANCE OF EXPERIENCE I CAN BE PROUD OF
IMPORTANCE OF MONEY FOR COLLEGE
IMPORTANCE OF SKILL TRAINING
IMPORTANCE OF EARNING MORE MONEY
IMPORTANCE OF MENTAL CHALLENGE
IMPORTANCE OF TRAINING IN USEFUL SKILL AREAS
IMPORTANCE OF BECOMING A RESPONSIBLE PERSON
IMPORTANCE OF HELPING CIVILIAN CAREER DEVELOP.
IMPORTANCE OF PHYSICAL TRAINING
IMPORTANCE OF BECOMING MORE SELF-RELIANT
IMPORTANCE OF OPPORTUNITIES TO FIND A JOB
IMPORTANCE OF SERVING MY COUNTRY
IMPORTANCE OF MONEY FOR VOTECH/BUSINESS EDUC
IMPORTANCE OF PROVING I CAN MAKE IT
IMPORTANCE OF LEADERSHIP TRAINING
IMPORTANCE OF WANTING TO BE A SOLDIER
IMPORTANCE OF MILITARY/EXPER TO BOTH MEN/WOMEN
IMPORTANCE OF FRINGE BENEFITS
IMPORTANCE OF STEPPING STONE--HS TO COLLEGE
IMPORTANCE OF EXPERIENCING MILITARY LIFE
IMPORTANCE OF WORKING WITH HIGH-TECH EQUIPMENT
IMPORTANCE OF RETIREMENT BENEFITS
IMPORTANCE OF TIME TO DECIDE LIFE PLANS
IMPORTANCE OF MEN AND WOMEN TREATED EQUALLY
IMPORTANCE OF UNEMPLOYMENT
IMPORTANCE OF FAMILY TRADITION TO SERVE

The set of questions considers the possible enlistment motivators such as self-improvement, money for college,

service to country, benefits, skill training etc. This research will identify the motivational factors which are important to an individual enlisting in the Reserves. Statistical techniques of log-linear modelling and factor analysis are used to analyze the responses to these questions to assess the relative importance or significance of different enlistment motivations for different gender and mental category market segments.

C. RESEARCH HYPOTHESES AND METHODOLOGY

1. Hypotheses

Motivation variables will be evaluated for differences between each quality group, as well as between men and women. The high quality group will be segmented by gender. Therefore, it is hypothesized that high quality soldiers have different reasons or factors for enlisting in the Army Reserve than non-high quality soldiers. It could also be hypothesized that men enter the Reserves for different reasons than women. And therefore, that high quality men may be motivated by different reasons than high quality women. There may be differences in the motivations of non-high quality men and women.

2. Log-Linear Model

The forced response question may be influenced by many categorical variables. These variables are a recruit's gender, mental category, ethnic group, educational status, and marital

status. The log-linear model was used to analyze this multivariate table of categorical variables. Under certain assumptions, the log-linear model provides statistical tests. It provides a global test for differences within each independent variable rather than a series of tests as in crosstabulation. In addition, the results allow for a test of interaction effects. [Ref. 42:p. 717] A recruit's population profile must be defined by the observed values for each of these variables. Essentially, a multi-dimensional contingency table is formed with the five categories as the rows and the ten different responses as the columns. The effects of each category or the various combinations of interactions on each response can be analyzed by using the Statistical Analysis System (SAS) technique called CATMOD procedure. The data set defines a subject population profile as the independent variables. [Ref. 40:p. 21] In order to ensure at least five observations in each cell, only 21 profile populations were developed, as shown in Table 11. The response profile is defined as the dependent variable, in which there are ten for the forced response question as shown before in Table 9. The contingency tables would look as such:

		RESPONSES					
		1	2	3	...	10	(j)
P	1	$n_{1,1}$	$n_{1,2}$	$n_{1,3}$	...	$n_{1,10}$	n
O	2	$n_{2,1}$	$n_{2,2}$	$n_{2,3}$	...	$n_{2,10}$	n_2
P							
U	.						.
L	.						.
A	.						.
T							
I							
O							
N							
S	(i) 21	$n_{21,1}$	$n_{21,2}$	$n_{21,3}$	...	$n_{21,10}$	n_{21}

Therefore the probability that an observation or a response would be from that population profile is estimated by the sample proportion:

$$p_{i,j} = n_{i,j}/n_i$$

A vector (p) of all such proportions is then transformed into a vector of functions, denoted F(p). The assumed linear model is as follows:

$$E_a(F) = F(\pi) = X * \beta$$

E_a--Asymptotic expectation of the observed values

X--Design Matrix (0 ± 1) Depends on responses

ß--Parameter Vector

For categorical data, by taking logs of both sides, the model above becomes linear:

$$\pi = e^{(X * \beta)}$$

therefore

$$\ln(\pi) = (X) * \beta$$

X--Design matrix (0,±1) Depends on responses

Note that the summation of the probabilities must equal 1.0 and the summation of the means in columns (j) equal 0.0. [Ref. 43:pp. 115-116] The hypothesis to be tested is the following:

$$H_o: \quad \beta = 0$$

The results of the log-linear model will test the main effects of demographic variables and their interactions on the responses in the recruit's enlistment decision.

3. Kendall Tau Correlation

Initially the non-parametric Kendall Tau test was conducted on the multinominal questions in order to see if there was any correlation between the bivariate data set of gender to response or mental category to response. The main advantage of the Kendall Tau over the Spearman Rho test is

TABLE 11

LOG-LINEAR MODEL POPULATIONS (N=1550)

SAMPLE	GENDER	MENTAL CAT.	ETHNIC GRP.	ED. ST.	MAR. ST.
(N = 59)	MALE	NON-HI-QUAL	WHITE	HSDG	SINGLE
(N = 43)	MALE	NON-HI-QUAL	WHITE	HSST	SINGLE
(N = 92)	MALE	NON-HI-QUAL	MINORITY	HSDG	SINGLE
(N = 13)	MALE	NON-HI-QUAL	MINORITY	HSDG	MARRIED
(N = 26)	MALE	NON-HI-QUAL	MINORITY	HSST	SINGLE
(N = 333)	MALE	HI QUALITY	WHITE	HSDG	SINGLE
(N = 31)	MALE	HI QUALITY	WHITE	HSDG	MARRIED
(N = 398)	MALE	HI QUALITY	WHITE	HSST	SINGLE
(N = 92)	MALE	HI QUALITY	MINORITY	HSDG	SINGLE
(N = 13)	MALE	HI QUALITY	MINORITY	HSDG	MARRIED
(N = 83)	MALE	HI QUALITY	MINORITY	HSST	SINGLE
(N = 16)	FEMALE	NON-HI-QUAL	WHITE	HSDG	SINGLE
(N = 17)	FEMALE	NON-HI-QUAL	WHITE	HSST	SINGLE
(N = 55)	FEMALE	NON-HI-QUAL	MINORITY	HSDG	SINGLE
(N = 13)	FEMALE	NON-HI-QUAL	MINORITY	HSDG	MARRIED
(N = 27)	FEMALE	NON-HI-QUAL	MINORITY	HSST	SINGLE
(N = 77)	FEMALE	HI QUALITY	WHITE	HSDG	SINGLE
(N = 16)	FEMALE	HI QUALITY	WHITE	HSDG	MARRIED
(N = 67)	FEMALE	HI QUALITY	WHITE	HSST	SINGLE
(N = 60)	FEMALE	HI QUALITY	MINORITY	HSDG	SINGLE
(N = 20)	FEMALE	HI QUALITY	MINORITY	HSST	SINGLE

that its distibution approaches the normal distribution quite rapidly so the normal approximation is better. [Ref. 35: p. 256] The set of questions are evaluated by two different quality groups and gender groups. The means are computed for the 29 influence variables shown in Table 10. The number of concordant and discordant observations are counted so the measure of correlation was calculated from the following equation:

$$\tau = \frac{(N_c - N_d)}{(n*(n-1)/2)}$$

The specific calculations are shown in Appendices B and C. The Gender correlation was .813 and the Mental Category correlation coefficient was .808. This is a non-parametric test that shows that there is a fairly high association between the way the genders and mental categories view the influence variables.

4. Factor Analysis

The multinominal questions in Table 10 identifying the reasons a recruit enlisted were investigated employing factor analysis to obtain reduced sets of related variables. Standard packaged programs in SAS Version 5.0 were used. The single most distinctive characteristic of factor analysis is its data-reduction capability. [Ref. 36:p. 468] The factors developed in the factor analysis are selected mainly to explain the interrelationships among original variables.

[Ref. 37:p. 1] Underlying factors will be extracted from the large and diverse reasons for enlisting. These composite factors may be economic or personal, but it will aid the recruiter to understand the basic factors that motivate a person to enlist.

Factor analysis has three ordinary steps:

- Preparation of the correlation matrix
- Extraction of the initial factors
- Rotation to a terminal solution.

The correlation matrix calculates the correlation coefficients between the different questions' responses. The extraction of the initial factors through principal-component analysis, transforms one given set of variables into a new set of composite variables which are orthogonal or independent to each other. Therefore, the first principal component may be viewed as the single best summary of linear relationship exhibited in the data. [Ref. 36:p. 470] The principal component model for our analysis is expressed as below:

$$Z_i = a_{i1}F_1 + a_{i2}F_2 + \ldots\ldots a_{ik}F_k$$

a_{ik}--correlation coefficients

F_k--factors/uncorrelated components $k = 1,\ldots,4$

Z_i--Answer to multinominal question $i = 1,\ldots,29$

Rotation to a terminal solution is done by an orthogonal technique called varimax rotation which ensures that each

factor is independent of each other. The number of factors retained in the analysis is restricted to those factors that have an accounted variance of one or more. The analysis shows four distinct factors. It also gives factors scores which explain how much variance is accounted by each response. [Ref. 40:pp. 337-338] These scores will be analyzed by using a generalized linear model in order to identify the significance of various demographic variables on each factor. These rotated factor loadings will form a matrix similar to a regression coefficient matrix. The factor loadings will fit in the factor model, which best explains the underlying features of the data. The following shows the basic model used and explains the variance within the data.

$$Z'_i = C_i + e_i$$

where:

$C_i = a'_{i1}F'_1 + a'_{i2}F'_2 + a'_{i3}F'_3 + a'_{i4}F'_4$

a'_{ik}--Rotated Factor Loadings

F'_k--Identified Factors with criteria k = 4

Z'_i--Individual Responses variables

e_i--error/residual.

The variance of each individual response is the sum of the components:

$$Var\ (Z'_i) = Var\ (C_i) + Var\ (e_i)$$

where:

$$\text{Var } (C_i) = a'_{i1}{}^2 + a'_{i2}{}^2 + a'_{i3}{}^2 + a'_{i4}{}^2$$

The Var (C_i) is commonly known as the communality whereas the Var (e_i) is known as the unique variance. [Ref. 41:pp. 6-12]

The generalized linear model (GLM) procedure in SAS will be used to perform analysis of variance (ANOVA) of the factor scores. [Ref. 40:p. 17] The mean of each identified factor will be compared for the five demographic variables of gender, mental category, marital status, ethnic group, and educational status. Differences among main and interaction effects will be tested. Each demographic variable has two levels.

$$F_i = \mu_0 X_{0i} + \mu_1 X_{1i} + \ldots + \mu_k X_{ki} + e_i$$

F_i--response for i^{th} Factor

μ_k--estimated mean factor score for each demographic level k = 1,...,10

X_{ki}--design variable (0, ±1)

e_i--error/residual

Chapter IV will discuss the results of the analysis on the New Recruit Survey. It will give each result discussed in the methodology.

IV. ANALYSIS OF MOTIVATORS

A. ANALYSIS

1. Univariate

The New Recruit Survey contains many questions which address the importance of certain possible motivational factors on the recruit's enlistment decision. The 1987 NRS includes a "forced-response" question which requires the respondents to indicate which specific factors were most important to their enlistment decision and 29 multinominal questions that allow respondents to rank according to importance several reasons for enlistment. This research will focus on non-prior military service personnel, who are high school graduates or still in high school.

Several demographic variables may be important influences on a recruit's enlistment decision. Table 12 gives the definition of important demographic categories used in this research which include gender, ethnic group, educational status, marital status, and mental category.

Table 13 shows the percentage of the responses on the forced response question by each demographic category classification. A chi-square test indicates that each demographic category has at least one significant difference between a recruit's reason for enlistment at a .05 level of significance. However, there is still a need to find which

TABLE 12

DEMOGRAPHIC VARIABLE DEFINITIONS

Gender:	Male Female
Marital Status:	Single (Single & Divorced w/o children) Married (Married & Divorced w/ children)
Educational Status:	HSDG (High school graduate or higher) HSST (Still in High school)
Ethnic Group:	White Minorities (Black, Hispanic & Others)
Mental Category:	High Quality (AFQT I, II & IIIA) Non-high Quality (AFQT IIIB & lower)

specific reasons for enlisting were different for which demographic variables.

Variations in the respondent's most important reason for enlistment by gender shows that males report an economic factor of "earn more money" more frequently than the females. The males indicate a much higher response to "serve my country" of 11.4% against only 5.2% for females. However, females clearly respond that "proving I can make it" is much more important to them than men. Interestingly, both genders respond that the most important reason for enlisting is "Money for college," where around 50% of both male and female respondents picked this factor. This is a factor that continually dominates as the most important reason for enlisting. This

TABLE 13

MOST IMPORTANT REASON FOR ENLISTING BY DEMOGRAPHIC CATEGORY IN PERCENTAGES

Reason for Enlistment	Gender*		Marital Status*	
	Male (N=1182)	Female (N=368)	Single (N=1465)	Married (N=85)
Unemployed	1.6	1.6	1.4	5.9
Get away from home	2.7	3.3	3.0	--
Travel	0.7	3.0	1.2	1.2
Personal problem	1.4	1.5	1.4	2.3
Serve my country	11.4	5.2	9.8	11.8
Earn more money	11.2	8.7	10.4	12.9
Family tradition	1.1	--	0.8	1.2
Prove I can make it	9.5	15.8	10.9	12.9
Training	13.1	10.6	12.4	15.3
College money	47.3	50.3	48.7	36.5
	100.0	100.0	100.0	100.0

Reason for Enlistment	Educational Status*		Ethnic Group*	
	HSDG (N=869)	HSST (N=681)	White (N=1057)	Minority (N=493)
Unemployed	2.1	1.0	1.2	2.4
Get away from home	2.3	3.5	2.8	2.8
Travel	1.2	1.3	0.8	2.0
Personal problem	1.6	1.3	1.9	0.6
Serve my country	7.2	13.4	12.5	4.5
Earn more money	10.7	10.4	9.8	12.2
Family tradition	0.8	0.9	0.9	0.8
Prove I can make it	10.4	11.8	11.2	10.6
Training	13.0	11.9	12.6	12.4
College money	50.7	44.5	46.3	51.7
	100.0	100.0	100.0	100.0

TABLE 13 (CONTINUED)

Reason for Enlistment	Mental Category*	
	High Quality (N=1182)	Non-high Quality (N=361)
Unemployed	1.1	3.3
Get away from home	3.0	2.2
Travel	1.1	1.7
Personal problem	1.5	1.5
Serve my country	11.3	5.5
Earn more money	10.7	10.2
Family tradition	0.7	1.4
Prove I can make it	10.8	11.4
Training	9.9	21.0
College money	49.9	41.8
	100.0	100.0

* Chi-square test showed at least one significant difference in their reasons given for enlistment between all demographic sub-groups at .05 level.

supports the reason why the college fund is so important for the Army as an enlistment incentive.

The marital status cross-tabulation shows that the married recruit and the single recruit respond similarly. Though married enlistees are much more concerned about "unemployment" than single soldiers, they have only slight differences on most factors with the exception of "money for college". The married enlistee is not as concerned about "money for college" (36.5%) as the single soldier (48.7%) This may be contributed to the fact that a married person may have more financial obligations. The married recruit is more inclined to respond to economically based variables like "unemployment," "earn more money," and "training" than his single counterpart.

The educational status sub-groups respond similarly to the most important reason for enlisting in the Reserves. The main difference between the educational status of a recruit shows that the recruit still in high school displays a more patriotic zeal to "serve my country" compared to the high school graduate. This may be of the influence of counselors and teachers on the students while still in high school.

The differences in the enlistees' responses according to their ethnic group show that a white recruit responded almost three times as frequently to the reason "to serve my country" compared with the minorities. This disparity is very interesting and could relate to the minorities perception of nationalism. The minority recruit responds more frequently to the economic motivation variable of "earn more money" than the white one. Nevertheless, the majority of whites and minorities respond that "money for college" is their most important reason for entering the Army Reserves.

Differences between the different mental categories show that the higher quality recruit responds twice as frequently (11.5% vs 5.5%) to the patriotic variable of "to serve my country" than the non-high quality recruit. However, the non-high quality enlistee is more concerned with the economic factors of "unemployment" and "training" when enlisting in the Army. This "training" factor is the non-high quality recruit's second most important reason for enlisting with 21% as compared to only 9.9% by the high quality soldier.

Again the educational factor of "college money" is most frequent response for both mental categories.

2. Multivariate Log-Linear Analysis

A multivariate log-linear model was used to analyze recruit selection of the most important reason for enlisting in the Army Reserves. This analysis not only allows us to look at the main effects of each variable, but also to investigate if higher order interactions have any effect. In this analysis it is not the value of a particular qualitative variable, be it dichotomous or polychotomous, that is important but the probability that the variable takes on a particular value. [Ref. 38:p. 21] This is very similar to multidimensional contingency tables where the general approach of using a log-linear model is valuable for identifying relevant interaction effects and for revealing relatively simple structures underlying seemingly complex relationships among variables. [Ref. 39:pg. V]

Log-linear modeling requires that each cell have at least five observations, as near empty cells may cause difficulties. This is desired so the Chi-squared test could lend itself to be a credible statistical test. In addition, the number of observations in each cell should be at least five so that the normal approximation to the binomial distribution test statistic can be used to test the significant differences between the effects. [Ref. 35:p. 158] In order for the data to meet this criteria, the data

structure was redefined and Table 11 in Chapter III shows each sample population for which at least 12 observations were in each cell. The multivariate data are structured into the ten response levels (reasons for enlisting), 21 different population combinations from the five demographic categories (gender, ethnic group, educational status, marital status,and mental category), and a total of 1550 observations. The SAS program technique PROC CATMOD is used to build the log-linear model.

This program estimates the main effects and the higher order or the multiplicative interactions of the categorical variables. The results indicate that there is no significant effect of the second degree or higher interactions at the .05 level of significance on the forced-choice question. However, the main effects lead to some significant results concerning the categories on the ten possible responses. These results can be interpreted as the mean effects where the sum of the mean responses must equal zero. The negativity or non-negativity expresses the direction the mean tends towards in the dichotomous levels of the demographic variables. The results are shown in Table 14.

The log-linear model indicates at a significance level of .01 that by gender category, the mean effect of the responses of "travel" and "prove I could make it" is significantly favored more by females than males for its importance on their enlistment decision. Whereas the males

TABLE 14

DIFFERENCES BY DEMOGRAPHIC VARIABLES
ON MOST IMPORTANT REASON FOR ENLISTING

REASON	GENDER	MENT. CAT.	ETH. GRP.	ED. ST.	MAR. ST.
UNEMPLOYED		.53**			-.70**
GET AWAY FROM HOME					
TRAVEL	-.57*				
PERSONAL PROBLEM					
SERVE MY COUNTRY	.28**		.43*	-.34*	-.48**
EARN MORE MONEY					
FAMILY TRADITION	.56**				-.85**
PROVE I CAN MAKE IT	-.25*			-.18*	
TRAINING		.59*	.25*		
COLLEGE MONEY	.47*	-2.71*	-.94*	1.46*	4.40*

* Significant difference at $p \leq .1$
** Significant difference at $p \leq .05$

Note: Summation of demographic means in the columns = 0

Gender	Mental Cat.	Ethnic Grp.	Educat.St.	Mart.St.
+ Male	+ Non-High	+ White	+ HSDG	+ Single
- Female	- High Qual.	- Minority	- HSST	- Married

tend to favor significantly the "college money" and "to serve my country."

The mean effect of the mental category shows that the non-high quality recruit favored the economic factor of "unemployment" and "family tradition to serve" over the high quality recruit at a significance level of .05. This implies that economic factors affect the non-high quality recruit more than the high quality recruit. Another interesting result is that non-high quality recruits favor significantly at $p \leq .01$ the response "training," which is consistent with earlier results. As expected, the high quality enlistee shows a high mean effect of -2.71 for "money for college" compared to the non-high quality enlistee, indicating that the high quality recruit is concerned with obtaining a college-level education. This is consistent with the observation that high school graduates tend to be higher quality recruits.

The ethnic group categorical variable is significant at the .01 level with white recruits more likely to favor "to serve my country" and "training" as their most important reason for enlisting; minority recruits were more likely to favor "money for college." The same holds true for the educational status of the enlistee. For recruits, who are still in high school, the most important reason for enlisting is "serve my country" and "training" which is significantly different than a high school graduate recruit. The high school graduate's mean main effect of 1.46 (significant at .01 level) indicates that educational "money for college" is more important to them than for a recruit still in high school.

The mean effect of the response "money for college" is favored as the most important reason for single soldiers with a mean value of 4.4 which is significant at the .01 level; where married soldiers tend to look favorably on "to serve my country" and a "family tradition to serve."

3. Multivariate Factor Analysis

As mentioned earlier, recruits have multiple reasons for wanting to enlist in the Army Reserves. Analyzing the responses of the 29 multinomial questions by using factor analysis may reveal significant information about the inter-relationships and underlying dimensions of interest that may have generated the observed responses to these questions.

The primary reason for using factor analysis was to reduce the large set of 29 reasons for enlisting into a smaller set. Initially factors or interpretable groups were extracted from a larger set of variables from the correlation matrix. These factors were orthogonally rotated by the quartimax technique. Rotation using the promax or the varimax technique produced the same number of interpretable factors. These techniques ensure that the individual factors were orthogonal to each other and more directly interpretable.

The factor analysis results indicated that there are four unassociated factors underlying the 29 reasons for enlistment. Table 15 shows the results of the factor loadings using the quartimax orthogonal solution. The analysis restricted the eigenvalues (variance accounted for by each

TABLE 15

ROTATED FACTOR LOADINGS**
QUARTIMAX (ORTHOGONAL)

	FACTORS				
	I	II	III	IV	
	Self Improve-ment	Skill Train-ing	Mili-tary Serv.	Educa-tional Money	Shared Vari-ance
Reason Enlisted					
Unemployment*	---	---	.338	---	.139
Better Self	.553	---	---	---	.366
Serve Country	.573	---	---	---	.448
Family Tradition*	---	---	.364	---	.248
Prove I can Make	.543	---	---	---	.333
Money for College	---	---	---	.716	.521
Want to be Soldier	.573	---	.300	---	.504
Money Votech/Bus.	---	.339	---	.351	.329
Physical Trng	.677	---	---	---	.463
Time Out*	---	---	.343	---	.182
Leadership Trng	.628	---	---	---	.432
Retirement	---	---	.562	.329	.501
Fringe Benefits	---	---	.530	.428	.544
More Self-Reliant	.688	---	---	---	.520
Exp. Mil. Life	.472	---	.381	---	.370
Responsible Person	.722	---	---	---	.553
Earn more Money	---	---	---	.613	.446
Skill Trng	---	.773	---	---	.694
M/F Treated Equal	.301	---	.483	---	.355
Mil. Exp. for M/F*	.417	---	.353	---	.371
Work Hi-tech Equip	.338	---	.391	---	.366
Step Stone HS-Coll*	---	---	---	.386	.243
Civ. Career Develop	---	.735	---	---	.642
Opportunity to Job	.368	.640	---	---	.626
Train Skill Area	.409	.699	---	---	.678
Exp. Proud of	.741	---	---	---	.600
Develop Potential	.818	---	---	---	.720
Self-Confidence	.827	---	---	---	.719
Mental Challenge	.784	---	---	---	.623
Variance Accounted for:	7.010	2.579	2.077	1.846	

* Shared variance < .30
** Factor loadings < .30 not interpreted

factor) to greater than or equal to 1.0 to ensure stability within the factors. The numbers presented in the columns of Table 15 are called factor loadings. Factor loadings indicate the strength of the relationship between the individual reasons for enlistment. Reasons loading positively on the same factor tend to be more important to the same people; the larger the factor loading, the stronger the relationship between the individual reason and that described factor. Factor loadings of less than .30 are usually not interpreted and have been removed. The shared variance indicates how well all the factors considered together account for the variability of the individual reasons for enlistment. The art of factor analysis allows the analyst to subjectively interpret and label the factors. This is a weakness of this procedure as there may be some variation in the labeling or interpretation of the underlying factors by different analysts.

The first factor was named "Self Improvement." The self improvement factor consisted of the 13 individual reasons of "Better Self," "Prove I can Make it," "Serve Country," "Want to be a Soldier," "Physical Training," "Leadership Training," "More Self-Reliant," "Experience Military Life," "Be a Responsible Person," "Males/Females Treated Equally," "Military Experience Important for Males/Females," "Work with Hi-Tech Equipment," "Opportunity for Job," "Training in a Skill Area," "Experience I can be Proud of," "Develop

Potential," "Self-Confidence" and "Mental Challenge. This factor shows that high factor loadings are displayed in reasons associated with "Self Improvement" such as responsibility, developing potential and self-confidence, and having an experience that one can be proud of and is mentally challenging.

The second factor was labeled "Skill Training" and consisted of five reasons. These individual reasons accounting for this factor were "Money for Votechnical/ Business School," "Skill Training," "Civilian Career Development," "Opportunity for a Job" and "Train in a Skill Area." This factor was readily interpretable.

The third factor was identified as "Military Service." It consisted of the ten reasons of "Unemployment," "Family Tradition," "Want to be a Soldier," "Time Out," "Retirement Benefits," "Fringe Benefits," "Experience Military Life," "Males/Females Treated Equally," "Military Experience Important for Males/Females" and "Work with Hi-Tech Equipment."

The final factor was labeled "Educational Money." It was made up of the high factor loadings of "Money for College" and "Earn more Money." Other reasons were "Money for Votechnical/Business School," "Retirement Benefits," "Fringe Benefits" and "Stepping Stone from High School to College." This factor strongly indicates it is an economic based factor.

4. Factor Score Generalized Linear Model

In order to analyze whether a particular factor is characteristic of a particular demographic subgroup, each respondent's factor scores were obtained. These scores were generated for each enlistee in order to relate the effect of the demographic variables to each factor. An analysis of variance was used to compare mean factor scores among various demographic categories.

Each factor was defined as the dependent variable and the demographic variables of mental category, gender, marital status, educational status, and ethnic group were the independent variables. Each main effect and the higher order effects were investigated. The main effect results are summarized in Table 16. The effect of the demographic variables and their interactions were tested to see if there were any significant differences in the mean responses using the F-test. The assumptions for an ANOVA to provide valid statistical results are that the factor scores are independent normally distributed random variables with equal variances. This enables the analysis of the main effects and their multiplicative interactions of the demographic variables on each factor to be easily interpreted through the mean factor scores.

The ANOVA on the recruits mean factor scores on the "Self Improvement" factor showed that mental category had a significant effect on the enlistees' factor score. (See Table

16.) The mean factor scores displayed in Table 17 can be interpreted that the higher positive scores tend to say that this factor was more important in the enlistment decision, while larger negative numbers indicate that an enlistee had lower scores on a particular factor or that factor was not as important in his enlistment decision.

TABLE 16

SIGNIFICANT DIFFERENCES OF THE MAIN DEMOGRAPHIC EFFECTS

	Self Improvement	Skill Training	Military Service	Educational Money
Mental Category	***	***	***	--
Ethnic Group	--	***	--	***
Marital Status	--	--	--	***
Gender	--	***	--	***
Educational Status	--	--	--	--

*** $p < .01$

Table 17 is shown in hundredths in order to facilitate interpretation. The non-high quality recruits tend to view the "Self-Improvement" factor as an important reason to enlist in the Army Reserves at a .01 significance level. Further analysis of the effects of their interactions will be discussed later.

TABLE 17
MEAN FACTOR SCORES
(in hundredths)

	Self Improvement	Skill Training	Military Service	Educational Money
Mental Category				
Quality	- 5.7***	-11.6***	- 8.3***	2.4
Non-Quality	17.2	40.7	28.5	- 7.1
Ethnic Group				
White	- 4.4	-10.1***	- 1.5	- 4.5***
Other	8.3	23.6	3.5	11.2
Marital Status				
Single	- 0.1	- 1.2	0.0	2.1***
Married	- 6.8	23.1	- 0.7	-29.3
Gender				
Male	- 4.1	- 7.1***	0.1	- 3.5***
Female	10.9	23.5	- 0.3	12.5
Educational Status				
High School Degree	- 1.6	1.7	- 1.6	- 1.9
Still in High Schl	0.9	- 1.8	2.0	3.2

*** $p \leq .01$

The second factor of "Skill Training" showed that mental category, ethnic group and gender had significant effect on the scores of this factor. Characteristics of a recruit for whom "Skill Training" would be important in the enlistment decision are non-high quality, a minority (other) and female. There is a large difference in the factor mean scores between mental categories. The non-high quality recruit had a mean factor score of 40.7 while the high quality

recruit had a -11.6, which was significant at $p < .01$. The same was true for the females (23.5) over the males (-7.1). The minorities had a much higher mean factor score (23.6), indicating that the skill training factor positively influenced the enlistment decision. There was a significant difference at $p < .01$ between the recruit's ethnic heritage. The multiple interaction effects will be discussed later.

The third factor, "Military Service," was significant only within the mental category at $p < .01$. The non-high quality recruit had a mean factor score of 28.5 and viewed this factor as more important to his enlistment decision than the high quality recruit (-8.3). However, the mean scores for the other demographic variables show that there was not a significant difference between the mean factor scores.

The last factor was "Educational Money." There were significant effects on the mean factor scores by ethnic group, gender and marital status at $p < .01$. It is very interesting to note that there was not a significant difference in the way mental categories viewed this factor. Higher interaction effects will be investigated later to see if the other demographic variables cause mental category to have significantly different mean factor scores. The minority recruit indicated that educational money was a more positive influence to enlist (11.2) than the white recruit. The same holds true for the female recruit with a mean factor score of 12.5 compared to her male counterpart's score of -3.5. The

educational money factor, which is viewed as the Army's most effective recruiting tool for high quality recruits, showed that a single recruit felt that it was more important to his enlistment decision than the married recruit.

A multiple-stage test, the Duncan test was conducted on each factor and the demographic variables. [Ref. 40:pp. 470-475] This test is used to evaluate the interaction effects of the demographic variables. The higher order interactions can be tested for significance and mean factor scores are generated. This interaction between the demographic variables can be looked at as the synergistic effect of the demographic variables on the mean factor scores.

As indicated earlier in Table 17, there was a significant difference in the way the different mental categories viewed the importance of the "Self-Improvement" factor in their enlistment decision. Evaluating the synergistic effects showed that there was a second order effect of the interaction between mental category and gender at $p < .05$. Table 18 shows the mean factor scores of the respondents and explains why there may be such a differences between the high quality recruit and the non-high quality soldier. The high quality (10.9) and non-high quality female (11.0) have positive mean factor scores which are consistent with previous conclusions. However, the reason there is a difference in mental categories is because the high quality male views the "Self-Improvement" factor with a negative mean

factor score of -9.8 compared to the non-high quality recruit (20.6). This interaction effect accounts for the way the main effect of mental category views this factor. There were no other significant higher order interaction effects at $p < .05$ on the "Self-Improvement" factor.

TABLE 18

INTERACTION MEAN FACTOR SCORES
FOR THE SELF-IMPROVEMENT FACTOR
(in hundredths)

Mental Category	Gender	Sample Size	Mean Score
High Quality	Female	217	10.9
High Quality	Male	858	- 9.8
Non-High Quality	Female	112	11.0
Non-High Quality	Male	200	20.6

At $p < .05$ there were no multiplicative or higher order interactions for the "Skill Training" factor. However, the "Military Service" factor had three higher order interactions with significant differences between the mean factor score, which may account for the main effect difference in the mental category as shown in Table 17 earlier.

Table 19 shows the mean factor scores for the higher order interactions. The four way interaction shows that between mental categories there is very little effect of the other demographic variables, until one's educational status is investigated. Most high quality recruits have a negative mean factor score and non-high quality recruits have a positive

TABLE 19

INTERACTION MEAN FACTOR SCORES
FOR THE MILITARY SERVICE FACTOR
(in hundredths)

Mental Cat.	Ethnic Group	Gender	Education St.	Size	Mean Score
High Quality	Minority	Female	HSDG	50	-22.8
High Quality	Minority	Female	HSST	16	-10.7
High Quality	Minority	Male	HSDG	94	- .6
High Quality	Minority	Male	HSST	72	-39.7
High Quality	White	Female	HSDG	90	- 9.7
High Quality	White	Female	HSST	61	-14.8
High Quality	White	Male	HSDG	338	-18.5
High Quality	White	Male	HSST	354	9.4
Non-High Qual	Minority	Female	HSDG	57	27.7
Non-High Qual	Minority	Female	HSST	24	7.7
Non-High Qual	Minority	Male	HSDG	90	38.9
Non-High Qual	Minority	Male	HSST	19	22.7
Non-High Qual	White	Female	HSDG	13	24.3
Non-High Qual	White	Female	HSST	18	50.5
Non-High Qual	White	Male	HSDG	54	31.0
Non-High Qual	White	Male	HSST	37	8.3
High Quality			HSDG	572	-14.5
High Quality			HSST	503	- 1.2
Non-High Qual			HSDG	214	33.0
Non-High Qual			HSST	98	18.7
	Minority		HSDG	291	13.3
	Minority		HSST	131	-18.4
	White		HSDG	495	-10.3
	White		HSST	470	7.7

mean factor score. However, the high quality, white male that is still in high school has a mean factor score of 9.4 which is much different than a high quality, white male that has a high school degree or higher (-18.5). The high quality white male who is still in high school believes that "Military

Service" is a positive factor to enlist compared to his peers that have a High School degree. This interaction shows the relative effect that interactions have on this factor by mental category. The two way interactions between mental categories and educational status and the one between ethnic groups and educational status though significant, it is the four way effect of these variables that provides an explanation for the significant difference between high quality and non-high quality soldiers response for the importance of the "Military Service" factor for enlisting in the Army Reserves.

The last factor of "Educational Money" was significant for the main effects between ethnic group, marital status, and gender. The two way interactions between mental categories and marital status and of gender and educational status are shown below in Table 20. The introduction of the effect of mental categories on marital status explains why marital status had significant differences. The mean factor score of 3.3 for a high quality, single soldier shows that the college fund was an important factor for enlisting compared to his married high quality counterpart (-13.2) or his non-high single peer (-2.1). The main effect of gender differences is explained by the interaction of the educational level. The female recruit that is still in high school has a large positive mean factor score of 34.7 compared to her counterpart with a high school degree (0.0). The male recruits, regardless of his educational status, have negative mean

scores of -4.6 and -2.6 respectively. The underlying difference the way males and females view the "Educational Money" factor is due to the positive effect of the female recruit still in high school.

TABLE 20

INTERACTION MEAN FACTOR SCORES
FOR THE EDUCATIONAL MONEY FACTOR
(in Hundredths)

Mental Cat.	Marital St.	Gender	Educational St.	Size	Mean Score
High Quality	Married			56	-13.2
High Quality	Single			1019	3.3
Non-High Qual	Married			24	-66.7
Non-High Qual	Single			288	- 2.1
		Female	HSDG	210	0.0
		Female	HSST	119	34.7
		Male	HSDG	576	- 2.6
		Male	HSST	482	- 4.6

B. SUMMARY OF ANALYTICAL TECHNIQUES

This research concentrated on investigating the possible motivational reasons or factors which affected a recruit's decision to enlist in the Army Reserves. The data were obtained from the 1987 New Recruit Survey. Thirty questions were investigated out of over 200 total questions on the survey. The first question was a "forced-response" question with ten response levels. Initially, a cross-tabulation by demographic variables was conducted in order to get a general

understanding of the frequencies. A Chi-square test revealed that there was at least one significant difference in their reasons for enlisting between all demographic sub-groups at $p \leq .05$. To investigate what reason had significant differences by what demographic variables the responses were analyzed by a log-linear model. This analysis showed what the mean effects of the demographic variables by reason for enlistment. The sign of the mean effect gave the direction of the subgroup of the demographic variable. The high quality recruit showed that college money was very important in his enlistment decision. The non-high quality recruit believed that unemployment and skill training was more important for enlisting in the Army Reserve.

The second phase of the analysis utilized factor analysis to investigate 29 multinominal questions which asked the importance of certain reasons on a recruit's enlistment decision. Factor analysis reduced the data into four distinct orthogonal factors. The underlying factors were "Self-Improvement," "Skill Training," "Military Service" and "Educational Money." These factors were rotated by the quartimax technique. Independent factor scores were obtained for all four factors. Each factor was defined as the dependent variable and were classed by the five demographic variables using a generalized linear model. The mean factor scores were tested using the F-test to determine if there were any significant differences in the mean effects of each demographic variables

and their synergism. The mental category of the crecruit showed significant differences in the "Self-Improvement," "Skill training" and "Military Service" factors. The higher order interactions had to be evaluated in order to see what variables effected the significant difference.

Chapter V summarizes the specific results of the analysis of the 1987 Reserve New Recruit Survey. Conclusions and recommendations for further research are addressed.

V. SUMMARY

This thesis investigated and analyzed the motivational patterns of recruits entering the Army Reserves in 1987. The variables were taken from the 1987 New Recruit Survey and analyzed using a log-linear model, factor analysis, and generalized linear modelling to identify differences in these factors which caused a recruit to enlist in the Army. Identifying the motivational differences between a recruit who scored in the upper 50^{th} percentile on the Armed Forces Qualification Test (AFQT) compared to one that fell in the 10^{th}-49^{th} percentile will assist the recruiters and the recruiting command to properly market the target population. The research looked at thirty questions that dealt with the importance certain factors or reasons had on the enlistment decision. These responses were analyzed by the five demographic variables of mental category, ethnic group, educational status, marital status, and gender. This chapter will summarize the results of this analysis. Conclusions and recommendations for further research will also be presented.

A. IMPORTANCE OF RESEARCH

It is evident that the future of the U.S. Army depends on getting the highest quality soldiers possible. The Army needs a force that is intelligent, disciplined, and professional in

order to accomplish the multi-faceted missions required. Since the beginning of the All-Volunteer Army, the recruiter has been tasked with obtaining this type of force. The leadership of the Army is committed to the cause of maintaining the quality of the Army, but with an era of budgetary constraints, it is more important than ever to ensure the proper enlistment incentives are being used to attract the high quality person into the Army.

Quality is defined as a recruit that scored in the upper 50^{th} percentile of the standardized AFQT and is a High School graduate. The test score ensures that the recruit has the mental aptitude to learn, train, and become a leader in the Army, while the diploma substantiates his potential to adapt to military life and fulfill his contract obligation. Numerous research studies have concluded that the high quality soldier is less likely to have disciplinary problems, performs better on live-fire gunnery, and tends to be promoted more rapidly. The quality of a recruit quantifies the individual's potential success in the Armed Forces and is paramount for a strong military to protect the interests on the United States.

This research focused on the Army Reserves. The Reserves role within the Total Force is becoming more important as the speculation of force reductions within the Active Army may become reality. If reductions occur, the role of the Reserves may grow even more. Decision makers must be committed to the Reserve side of our military with monetary funds as much as

they depend upon them for over 53% of the total Army force structure. Most research in the area of motivational patterns has dealt with the Active Army. Results of this thesis should assist the Recruit Command in targeting market segments essential to successful Reserve recruiting.

The 1987 New Recruit Survey, administered at the Army's eight reception stations, provides the data used to analyze the recruits' motivational factors for enlistment. The New Recruit Survey has been a multi-year research endeavor to determine who is enlisting and why they are enlisting. It is used to determine how to target recruiting resources to attract "high" quality soldiers and what reasons the recruits gave for enlisting in the military. Analysis of this survey will enable the decision makers to determine what recruiting and advertising practices will be most effective. The New Recruit Survey allows the analysts to use statistical tools to make recommendations to the decision makers future advertising policy. The large sampling size and collection technique permitted a substantial statistical analysis to identify significant differences between already recruited Army Reservists.

B. ANALYSIS RESULTS

Thirty questions were investigated for this research on the most important reasons or factors for enlisting in the Army Reserves. One forced-response question allowed the

recruits to have ten independent response levels, while 29 multinominal questions allowed for a varied response from "not at all important" to "I would not have enlisted except for this reason." Factor analysis reduced the 29 responses to four underlying factors. These factors were "Self-Improvement," "Skill Training," "Military Service," and "Educational Money." To facilitate understanding the results were presented by each separate analytical technique.

The cross tabulated results of the forced-response question showed that educational money was the most important reason for recruits to enlist in the Army Reserves. All recruits, no matter which sub-group, stated that money for college was paramount in their enlistment decision. The high quality soldier was more concerned with education money (49.9% compared to 41.8% for the non-high quality recruit). The high quality recruit viewed interest on intrinsic reasons of proving they could make it and patriotic sense of serving their country. The non-high quality recruit showed a strong concern with economic reasons such as skill training and unemployment compared to the high quality recruit.

The male recruit was attracted to the military for training, service to country, and earning more money. The female recruit said that travel and proving that she could make in the military as more important than her male counterpart. Educational status did not display any noteworthy differences in reasons for enlisting except that

13.3 % of the recruits still in High School felt that service to country was more important compared to 7.2% of High School graduates. The ethnic sub-group of a recruit showed that the economic reason of earning more money was more prevalent for the minority recruit (12.2%) compared to 9.8% for the white recruit.

Results of the log-linear analysis showed only the main effects of the five demographic variables had significant differences on the reasons for enlisting. Higher order interactions had no significant effect. The log-linear results supported the earlier cross tabulated results. The high quality recruit enlisted due to large mean effect towards college money (-2.71) compared to the non-high quality soldier. The non-high quality recruit had significant mean differences towards economic reasons of unemployment, family tradition and skill training. The male recruit had enlisted for college money on the average significantly compared to a female recruit. While the female soldier felt that travel and proving that she could make in the military were important reasons for enlisting. The married recruit is very concerned with economic reasons such as unemployment, and patriotic feelings of service to country and family tradition compared to a single recruit. The single recruit expressed that college money was the significant mean reason for enlisting in the Army Reserves compared to his married counterpart.

The results of the factor analysis showed that four underlying factors were expressed by the recruits in the data. The results of the generalized linear model on the mean factor scores indicated that the mental category of the recruit had a statistically significant effect on three of these factors, gender and ethnic group had two, marital status had one and educational status had none. These results express the motivational differences between the sub-groups. The four composite motivational factors are "Self-Improvement," "Skill Training," "Military Service" and "Educational Money."

The "Self-Improvement" factor had significant differences between mental categories; a high quality recruit did not place as much weight on this factor as the non-high soldier in his reason to enlist. Interestingly there was a significant effect of mental category and gender. The high quality female viewed the "Self-Improvement" factor with a positive mean score like her non-high male or female counterpart. The high quality male was the person that has the large negative mean factor score, which accounts for the difference in the response.

The results of the "Skill Training" factor showed that the main effects of mental category, ethnic group and gender had significant differences between the mean score of recruits. There were no higher order interaction effects. The high quality recruit showed a large negative score compared to an extremely high positive score for the non-high quality

recruit. The largest difference in factors scores was on this factor. The high quality enlistee did not feel that "Skill Training" was a significant factor to enlist in the Army Reserves. The minority recruit felt that "Self-Improvement" was more important than the white one, as well as, the female recruit compared to her male counterpart.

The results of the "Military Service" factor which included reasons of fringe and retirement benefits, equal opportunity, wanting to be a soldier showed significant differences between mental categories. The non-high quality recruit had expressed that he believed that it was an important factor motivating enlistment compared to the high quality recruit. However, the four way interaction of mental category, ethnic group, gender, and educational status showed significant differences in the factor scores. The high quality, white male recruit that is still in High School believed that "Military Service" was an important factor in motivating enlistment in the military. He viewed the factor the same as his non-high quality peers. Most high quality recruits displayed a negative factor score.

The final factor of "Educational Money" showed significant differences between ethnic group, marital status and gender. The minority soldier felt that educational benefits were very important compared to the white soldier. The single soldier also believed it to be very important which was explained by the two-way interaction of marital status and mental category.

The high quality single recruit accounted for the strong result that "Educational Money" had on the marital status. The high quality married recruit responded the same as the non-high quality recruits. The female recruit had a more positive response to "Educational Money" compared to her male counterpart. The two-way interaction between gender and educational status showed that a female with a high school degree responded more like her male counterpart and the female still in high school accounted for the large positive effect on the recruit's gender had on the "Educational Money" factor.

C. CONCLUSIONS

Maintaining high quality within the Army is essential for the military to accomplish its mission. As the Army enters the age of high technology, reduced budget and shrinking youth population, its leadership must maximize the yield from resources in order to attract this high quality of soldiers. This is particularly true for the Army Reserves. The important role of the Reserves continues to grow under the All-Volunteer Army and is an integral part of the United States national security. The decision makers must focus on the Reserve forces and continue to analyze enlistment incentives.

The results of this research show that there are significant differences in the reasons or factors that motivate someone to enlist in the Army Reserves. These reasons or factors are both economic and non-economic. The recruit views

the military as a place to improve one's status in life. Educational money continues to be an important tool to attract the high quality soldier. The high quality recruit has enlisted in the Army Reserve mainly for college or educational money. The Montgomery GI Bill must be maintained. The non-high quality recruit continues to have a role in the military. The non-high quality recruit is attracted to economic based factors. He tends to want to improve themselves more and are interested in skill training opportunities.

The New Recruit Survey gives the decision makers an excellent multi-year data base in order to analyze the effects of enlistment incentives and what attracts recruits into the military. This survey should continue to be funded. Further research should be conducted on the Reserves forces. Research should include the effects of seasonality, recruiter's involvement and the impact of advertisement on the recruit's enlistment decisions.

APPENDIX A

ARMY NATIONAL GUARD AND ARMY RESERVE
CONTRIBUTIONS TO THE TOTAL ARMY

Unit type	% Nat'l Grd	% Army Reserve	% Total Army
TOW Light Inf Btn	100	0	100
Inf Scout Grps	100	0	100
Hvy Helo Companies	100	0	100
Training Divisions	0	100	100
JAG Units	2	98	100
Railroad Units	0	100	100
RACO centers	100	0	100
Civil Affairs	0	97	97
Public Affairs	64	30	94
Pathfinders	46	46	92
Supply and Service	31	69	90
Phycho Ops	0	89	89
Maintenance Co.	46	43	89
Infantry Btns	74	8	82
Corps Spt Grps	17	62	79
Separate Bdes	66	13	79
Chemical Smoke Gen.	0	78	78
Engineer Bridge Co.	48	29	77
Army Hospitals	11	65	76
Medical Units	24	49	73
Conventional Ammo Co.	17	51	68
Cbt Engineer Btns	43	24	67
Truck Co.	37	30	67
Military Police Co.	46	20	66
Corps Signal Btns	47	16	63
Armored Cavalry Reg.	57	0	57
Field Artillery Btns	47	9	56
Major Logistic Units	22	31	53
Watercraft Co.	7	44	51
Special Forces Co.	25	25	50
Mech. Infantry Btns	47	2	49
Armored Btns	43	2	45
POL Co.	0	45	45
Combat Divisions	36	0	36
Med. Helo Companies	11	11	22

Note: Percentage determined by counting like-type units
Data as of September 1987.

Source: [Ref. 25:p. 6].

APPENDIX B

KENDALL TAU BY GENDER

Variables	(X_i, Y_i)	Concordant Pairs	Discordant Pairs
M/F Treated Eq	(1.301,1.559)	26	2
Unemployment	(1.357,1.357)	26	1
Family Trad.	(1.450,1.312)	26	0
Time Out	(1.568,1.639)	24	1
Import Mil.M/F	(1.708,2.201)	16	8
Work Hi-Tech	(1.769,1.616)	23	0
Exp. Mil. Life	(1.800,1.872)	22	0
Retirement	(1.868,1.904)	20	1
Stepping Stone	(1.869,1.882)	20	0
$ Votech/Bus.	(1.925,2.032)	17	2
Fringe Benefit	(1.973,1.995)	18	0
Opportunity Job	(2.047,2.350)	13	4
Want to Soldier	(2.054,1.998)	16	0
Prove Make it	(2.079,2.311)	13	2
Leadership Trng	(2.118,2.152)	14	0
Help Civ. Car.	(2.226,2.378)	12	1
Self-Reliant	(2.234,2.510)	8	4
Trn Skill Area	(2.275,2.489)	9	2
Responsible	(2.340,2.493)	8	2
Skill Trng	(2.365,2.589)	6	3
Physical Trng	(2.397,2.461)	7	1
Mental Chall.	(2.428,2.510)	6	1
Serve Country	(2.505,2.309)	6	0
Exp. Proud of	(2.535,2.743)	4	1
Self-Confidence	(2.563,2.771)	2	2
Earn more $	(2.597,2.668)	3	0
Dev. Potential	(2.627,2.751)	2	0
Better Myself	(2.701,2.817)	1	0
$ College	(2.838,3.023)	0	0
		$N_c = 368$	$N_d = 38$

$$T = N_c - N_d$$

$$\tau_{gender} = .813$$

Note: X_i - Mean score Males
Y_i - Mean score Females

Scale: 1 - Not Important
2 - Somewhat Important
3 - Very Important
4 - Reason Enlisted

APPENDIX C

KENDALL TAU BY MENTAL CATEGORY

Variables	(X_i, Y_i)	Concordant Pairs	Discordant Pairs
M/F Treated Eq	(1.307,1.527)	26	2
Unemployment	(1.316,1.487)	26	1
Family Trad.	(1.421,1.409)	26	0
Time Out	(1.531,1.756)	25	0
Work Hi-Tech	(1.662,1.964)	23	1
Imp. Mil. M/F	(1.735,2.092)	19	4
Exp. Mil. Life	(1.760,1.998)	21	1
Stepping Stone	(1.825,2.022)	20	1
$ Votech/Bus.	(1.846,2.283)	15	5
Retirement	(1.851,1.957)	19	0
Fringe Benefit	(1.945,2.086)	18	0
Want to Soldier	(2.007,2.139)	17	0
Opp. Find Job	(2.016,2.434)	14	2
Prove Make it	(2.101,2.229)	14	1
Leadership Trng	(2.111,2.173)	14	0
Help Civ. Car.	(2.181,2.517)	10	3
Trn Skill Area	(2.244,2.577)	8	4
Self-Reliant	(2.249,2.452)	10	1
Responsible	(2.314,2.570)	8	2
Skill Trng	(2.331,2.689)	5	4
Mental Chall.	(2.394,2.613)	6	2
Physical Trng	(2.396,2.459)	6	1
Serve Country	(2.472,2.423)	6	0
Exp. Proud of	(2.521,2.780)	4	1
Self-Confidence	(2.557,2.783)	3	1
Earn more $	(2.608,2.628)	3	0
Dev. Potential	(2.609,2.807)	1	1
Better Myself	(2.703,2.803)	0	1
$ College	(2.926,2.732)	0	0
		$N_c = 367$	$N_d = 39$

$$T = N_c - N_d$$

$$\tau_{\text{mental category}} = .808$$

Note: X_i - Mean score High Quality
Y_i - Mean score Non-high Quality

Scale: 1 - Not Important
2 - Somewhat Important
3 - Very Important
4 - Reason Enlisted

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